

REMARKS**1. Summary of Office Action**

Claim 1-9 and 11-26 are now pending in this action, of which, claims 1, 9, 20 and 24 are independent. In the non-final office action dated January 12, 2006, the Examiner withdrew the previous rejection but initiated a new ground of rejection based on U.S. Patent No. 5,515,314 ("Kouhei"). Specifically, the Examiner found that claims 20-23 are allowable over the prior art of record; claims 2, 10-11, 18-19, and 26 would be allowable if rewritten in independent form; claims 1, 3-6, 8-9, 12, 14, and 24-25 were unpatentable over Kouhei; claims 15-16 were unpatentable over Kouhei in view of U.S. Patent No. 6,215,695 ("Ikeda"); and claims 7, 13, and 17 were unpatentable over Kouhei in view of U.S. Patent No. 6,888,742 ("Nguyen").

2. Claim Amendments

Claim 9 has been amended to include all the limitations of claim 10, and claim 10 has been cancelled. Because claim 9 includes all the limitations of the previous claim 10 rewritten in independent form, Applicant submits that claim 9 and its dependents are now allowable.

Claim 24 has been amended to correct a minor typographical error. The word "to" has been added in the next to last line of the claim.

3. Response to the Rejections

One aspect of the presently claimed invention is directed to a method and apparatus for substantially centering a hysteresis loop bias in a memory element, such as an MRAM element. Claim 1, for instance includes the step of "applying a bias current to a word line of the memory device to impose a bias field on a magnetoresistive element for centering a hysteresis loop of the magnetoresistive element." Independent claim 9 also includes a

limitation that requires that “the bias current [bc] configured to impose a bias field on the magnetoresistive element for centering a hysteresis loop of the magnetoresistive element.”

Similarly, amended independent claim 24, includes “the bias driver being configured to generate a bias current that substantially centers a biased hysteresis loop”

Thus, each rejected independent claim includes a limitation related to applying a bias current configured for centering of a biased hysteresis loop of a magnetoresistive element.

The Examiner found that these claims were anticipated by Kouhei. *The Kouhei reference, however, does not disclose a bias current configured for centering a biased hysteresis loop. Quite the opposite, Kouhei appears to apply a bias magnetic field to push a hysteresis point away from the zero-state. (See Figure 5, B₁).*

Figure 5 of Kouhei discloses an unbiased hysteresis loop that is initially centered around the origin. When a bias magnetic field (e.g., B₁) is applied to an element, the hysteresis point would shift away from the center and become biased itself. Thus, Kouhei appears to disclose a way to move away from a centered position but does not disclose the capability of centering an already biased hysteresis loop as claimed herein.

4. Conclusion

In view of the foregoing, Applicant respectfully submits that all of the presently pending claims are now in condition for allowance, and Applicant respectfully requests prompt favorable reconsideration. If there are any matters that may be resolved or clarified through a telephone interview, the Examiner is requested to contact Applicant's undersigned representative.

Respectfully submitted,

Date: January 30, 2006By: 

Dennis D. Crouch
Reg. No. 55,091